

Listing of Claims:

1. (Previously Presented) A quantum dot light-emitting diode comprising:
a top electrode;
a bottom electrode disposed substantially opposite the top electrode;
an inorganic quantum dot light-emitting layer provided between the top electrode and the bottom electrode; and
an inorganic electron transport layer disposed between the inorganic quantum dot light-emitting layer and the top electrode.

2. (Previously Presented) The quantum dot light-emitting diode according to claim 1, wherein the quantum dot light-emitting diode further comprises:
a substrate disposed beneath the bottom electrode; and
a hole transport layer disposed on the bottom electrode,
wherein the bottom electrode is an anode and the top electrode is a cathode, and
wherein the anode, the hole transport layer, the inorganic quantum dot light-emitting layer, the inorganic electron transport layer and the cathode are formed in this order on the substrate.

3. (Previously Presented) The quantum dot light-emitting diode according to claim 1, wherein the inorganic electron transport layer is made of an oxide selected from the group consisting of TiO₂, ZnO, SiO₂, SnO₂, WO₃, Ta₂O₃, BaTiO₃, BaZrO₃, ZrO₂, HfO₂, Al₂O₃, Y₂O₃ and ZrSiO₄; the nitride Si₃N₄; or a semiconductor compound selected from the group consisting of CdS, ZnSe and ZnS.

4. (Previously Presented) The quantum dot light-emitting diode according to claim 1, wherein the inorganic quantum dot light-emitting layer is made of a material selected from the group consisting of: Group II-VI compound semiconductor nanocrystals, including CdS, CdSe, CdTe, ZnS, ZnSe, ZnTe, HgS, HgSe and HgTe; Group III-V compound semiconductor nanocrystals, including GaN, GaP, GaAs, InP and InAs; PbS; PbSe; PbTe; CdSe/ZnS; CdS/ZnSe; and InP/ZnS.

5. (Previously Presented) The quantum dot light-emitting diode according to claim 1, wherein the inorganic electron transport layer is formed by a solution coating process selected from the group consisting of sol-gel coating, spin coating, printing, casting and spraying, or a vapor coating process selected from the group consisting of chemical vapor deposition (CVD), sputtering, e-beam evaporation and vacuum deposition.

6. (Original) The quantum dot light-emitting diode according to claim 2, wherein the hole transport layer is made of a material selected from the group consisting of poly(3,4-ethylenedioxythiophene) (PEDOT)/polystyrene para-sulfonate (PSS) derivatives, poly-N-vinylcarbazole derivatives, polyphenylenevinylene derivatives, polyparaphenylene derivatives, polymethacrylate derivatives, poly(9,9-octylfluorene) derivatives, poly(spiro-fluorene) derivatives, N,N'-diphenyl-N,N'-bis(3-methylphenyl)-(1,1'-biphenyl)-4,4'-diamine (TPD), N,N'-di(naphthalene-1-yl)-N,N'-diphenyl-benzidine (NPB), tris(3-methylphenylphenylamino)-triphenylamine (m-MTDATA), and poly(9,9'-dioctylfluorene-co-N-(4-butylphenyl)diphenylamine (TFB).

7. (Previously Presented) The quantum dot light-emitting diode according to claim 2, wherein the inorganic electron transport layer is made of an oxide selected from the group consisting of TiO₂, ZnO, SiO₂, SnO₂, WO₃, Ta₂O₃, BaTiO₃, BaZrO₃, ZrO₂, HfO₂, Al₂O₃, Y₂O₃ and ZrSiO₄; the nitride Si₃N₄; or a semiconductor compound selected from the group consisting of CdS, ZnSe and ZnS.

8. (Previously Presented) The quantum dot light-emitting diode according to claim 2, wherein the inorganic quantum dot light-emitting layer is made of a material selected from the group consisting of: Group II-VI compound semiconductor nanocrystals, including CdS, CdSe, CdTe, ZnS, ZnSe, ZnTe, HgS, HgSe and HgTe; Group III-V compound semiconductor nanocrystals, including GaN, GaP, GaAs, InP and InAs; PbS; PbSe; PbTe; CdSe/ZnS; CdS/ZnSe; and InP/ZnS.

9. (Previously Presented) The quantum dot light-emitting diode according to claim 2, wherein the inorganic electron transport layer is formed by a solution coating process selected from the group consisting of sol-gel coating, spin coating, printing, casting and spraying, or a vapor coating process selected from the group consisting of chemical vapor deposition (CVD), sputtering, e-beam evaporation and vacuum deposition.

10. (Previously Presented) A quantum dot light-emitting diode comprising:
a top electrode;
a bottom electrode disposed substantially opposite the top electrode;
an inorganic quantum dot light-emitting layer provided between the top electrode and the bottom electrode; and
an inorganic electron transport layer disposed between the inorganic quantum dot light-emitting layer and the top electrode,
wherein the inorganic electron transport layer includes an oxide selected from the group consisting of TiO_2 , ZnO , SiO_2 , SnO_2 , WO_3 , Ta_2O_3 , BaTiO_3 , BaZrO_3 , ZrO_2 , HfO_2 , Al_2O_3 , Y_2O_3 and ZrSiO_4 ; the nitride Si_3N_4 ; or a semiconductor compound selected from the group consisting of CdS , ZnSe and ZnS .